236371 Project in Distributed Programming – Serverless Classifier on OpenWhisk

Functional Specification

Description

In this project we will implement a serverless image classifier using OpenWhisk. The classifier will be accessible through a custom website where the user can upload an image that they want to be classified. The website will encode the image and send it to the serverless classifier. Once the image is classified, the result will be returned to the user's page and displayed there.

In the OpenWhisk part of the project we will use a pre-trained classification model. We will create a docker image that exports a classification function for an image, and the rest will be taken care of by OpenWhisk. This allows OpenWhisk to run multiple dockers in parallel if needed, and overall balance the load of incoming requests. By observing OpenWhisk's database we will also be able to gather metrics and statistics on our classifier and overall performance.

Functional Entities

In this project we have the following entities:

- OpenWhisk cloud service that runs the classifier
- Website that exposes the classification service to the clients
- Client's browser

Must have features

- A pre-trained image classifier
- A docker image that uses the image classifier
- An OpenWhisk service that exposes the usage of the classifier in the docker image
- A website that exposes the classification service through a REST API

Nice to have features

- Static website for full serverless hosting
- Admin page with statistics and information
    - How many requests
    - How much processing time did the classification take
    - etc.
- Multiple/different classifiers

Future Timeline

High-level design – 28.5.21

Alpha version – 25.6.21

Final version – 23.7.21